OBSERVATIONS OF HAWAIIAN

HAWK ACTIVITY

Spring 1985

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INTRODUCTION

This report is part of a continuing study to provide base-line data for Environmental Impact Assessments for activities associated with Puna Geothermal Ventures well sites located at Pohoiki, Puna, Hawaii.

Numerous sightings of the endangered Hawaiian Hawk or 'io (Buteo solitarius) in the area of the Puna geothermal resource has prompted continued observations of hawks and nests throughout the area. The data provided here adds to the work presented by previous workers.

METHODS

Seven days of field work ranging from four to ten hours each were conducted within an area of one mile radius of Pu'u Honuaula Puna, Hawaii, between 4 June and 15 July 1985.

Roads throughout the area were used for observations of Hawaiian Hawks. All hawks seen in the area were noted and plotted on maps for home range determination. Movements and activities were monitored to determine breeding status and presence of nest sites. Habitats suitable for hawk nesting were covered on foot. Previously reported nesting sites were searched out and nests observed.

Approximately two hours each field day were spent observing the only active nest found. Observations of the hawk chick were made from behind a natural fern "blind" approximately 40 meters from the nest for minimal disturbance to the chick and adult hawks.

OBSERVATIONS

A total of 23 Hawaiian hawk sightings were noted in the study area (Map 1). All sightings at the active nest site of the adult and chick are not included in this figure.

The greatest concentration of hawks noted were adults actively searching for prey in the area one half to one mile east of Pu'u Honuaula. Many of these sightings were adults from nest 1 (Map 2) foraging in this area.

A small number of hawk sightings (4) were made at Pu'u Honuaula and all appeared to be of a single light phased adult utilizing the area for foraging and roosting. This individual may have been the light phase juvenile, now an adult, noted by observers during previous years field work in the same area.

Other scattered sightings throughout the area were apparently individuals with overlapping territories using this part of the study area for foraging. Adult Hawaiian hawks stay in their home ranges year round while juveniles disperse from their parents' territory around six months old (Griffin, 1985).

The average Hawaiian hawk home range may vary from as little as 48 hectares in very open agricultural areas, to as large as 640 hectares in heavily forested areas (Griffin 1985). The area around Pu'u Honuaula is mostly open papaya fields making it easier for hawks to sight and catch prey attracted to the abundant fruit in the area. Thus, this area would tend to have higher hawk densities than the surrounding forested areas due to its greater utilization by hawks from nearby home

ranges. Also, unestablished immature hawks and sub adults establishing territories are more likely to utilize these open areas because of prey species abundance.

NEST OBSERVATIONS

All four previously recorded nest locations were searched but only three nests were found. Apparently no nest on Pu'u Honuaula had ever been found by previous workers. It had been assumed that a nest existed on the Pu'u because of the large number of hawks and associated hawk activity on and around the Pu'u (pers. comm. Stemmermann).

A nest previously found (nest #3, Map 2) just south of a subdivision road, southeast of the Pu'u and adjacent to an active well site (H.G.P.1) was found to be in a total state of disrepair and no longer in use.

On June 4th, a previously recorded nest was found to contain a nestling (nest #2, Map 2). This chick was noted to have very white down covering its body and was actively stretching its wings and walking shakely around the nest. Comparing these and later observations with that of Griffin's (1985) notes on known age of Hawaiian hawk chicks, it was determined that the nest #2 chick was between two and three weeks old when first found. This puts the hatch date in mid-May, and with an incubation period of 38 days, puts the egg-laying date in late April. This corresponds with Griffins (1985) data that most eggs are laid in late April.

Stemmermann (1985) noted adult hawks adding nesting material to nest #2 (Map 2) in June 1984 but never observed eggs or young. Apparently, Hawaiian hawks do not breed every year but will maintain a nest and often a second alternate nest within their territory. This second nest could be used if the first proved inadequate. Although no activity has been seen at a second nest site (nest #1, Map 2) 100 meters west of the active nest (nest #1), this well kept nest is most likely an alternate nest maintained by the active breeding pair.

During twelve hours of observation at the active nest both parents were noted bringing prey to the chick on five occasions. The four prey delivered on four occasions by the male included one Barred Dove (Geopelia striata), and three Japanese White-eyes (Zosterops japonica). The female only brought prey to the nest once, a House mouse (Mus musculus).

Each time prey was delivered, the adult would drop the prey at the nest and leave. The chick would sometimes wait as long as an hour before starting to feed.

The female usually remained visable near and around the nest during most of the observations, usually perched on a branch within sight of the nest. Other than during one feeding observation, the female was seen only once returning to the nest to protect the chick during a heavy rain.

HUMAN DISTURBANCE

A papaya field 100 meters from the active nest was a source of almost constant human disturbance. Bulldozers, tractors

and field workers were constantly in the area and in view of the nestling and adults. It appears that the hawk family had become habituated to the noise and activity as long as it remained at a distance.

On one occasion when the chick was approximately three weeks old, field workers in a truck stopped 50 meters from the nest and began to talk loudly and make noise unloading equipment. The adult hawks, which were not seen before the arrival of the workers, suddenly appeared near the nest and began calling frequently. The young hawk crouched low in the nest, while the adults, perched within five meters, continued calling. About 20 minutes later the workers moved further down the field and only then did the male leave the area. The female moved further from the nest, about 20 meters, and stopped calling. Meanwhile, the chick became more active and began moving about the nest.

On a second occasion, when the chick was six weeks old, a low flying helicopter flew over the nest site. The young bird became very agitated as the helicopter approached and nearly fell out of the nest when the helicopter flew over at tree top level. The female, perched 20 meters away at the time, began frantically flying from the perch branch to the nest and back again. This activity was continued until the noise of the helicopter had diminished.

CONCLUSION

Five to seven adult and juvenile Hawaiian hawks presently utilize the area within one mile radius of Pu'u Honuaula and because of the open nature of this agriculture area and its potential for attracting prey species to discarded fruit and weed seeds, Hawaiian hawks will continue to utilize this area for hunting, foraging for prey species and nesting.

Although only one active nest was found in the area, the frequency of hawk sightings suggests that the number of suitable nesting sites within the area is limited but hawks are nesting in nearby areas and foraging over the study area.

Land clearing for agricultural purposes, although detrimental to nesting sites, has allowed for an increase in food availability for hawks and thus an increase in the number of hawks utilizing the area from adjacent territories.

Although indirect human disturbance is noted to have a minor effect on nestlings, prolonged loud noise or close human activity could be detrimental to the young hawk if it were to fall from the nest or be abandoned by its parents.

RECOMMENDATIONS

With the only active Hawaiian hawk nest being found one mile east of the present active geothermal well site, and five to seven hawks utilizing the area for foraging it is recommended that:

1. Monitoring of Hawaiian hawk populations on a regular basis during breeding and nonbreeding periods be continued.
2. Nest surveys and observations should continue to determine breeding success during geothermal well development and activation.
3. Human interference and disturbance should be kept to a minimum, especiallly during peak incubation and early nesting stages.

LITERATURE CITED

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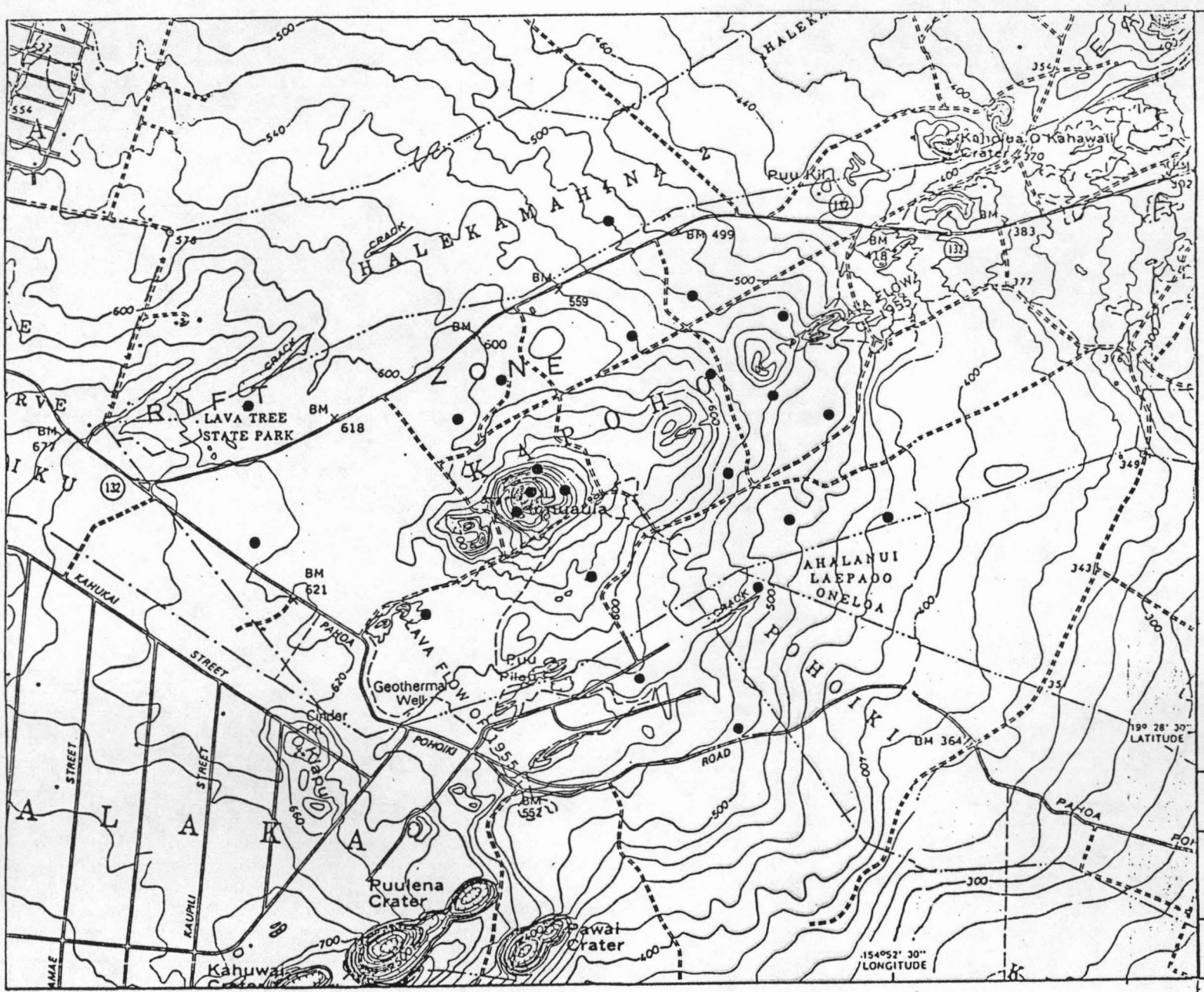
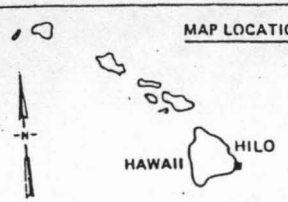
Griffin, C. R., 1985. Biology of the Hawaiian Hawk Buteo solitarius. Ph. D. Dissertation. University of Missouri, Columbia.

Stemmermann, M., 1985. Hawaiian Hawk Nesting Study. Prepared for Puna Geothermal Venture/Thermal Power Company.



MAP LOCATION



● HAWK SIGHTING

SCALE
CONTOUR INTERVAL 20 FEET

0 ½ MILE

0 1000 2000 FEET

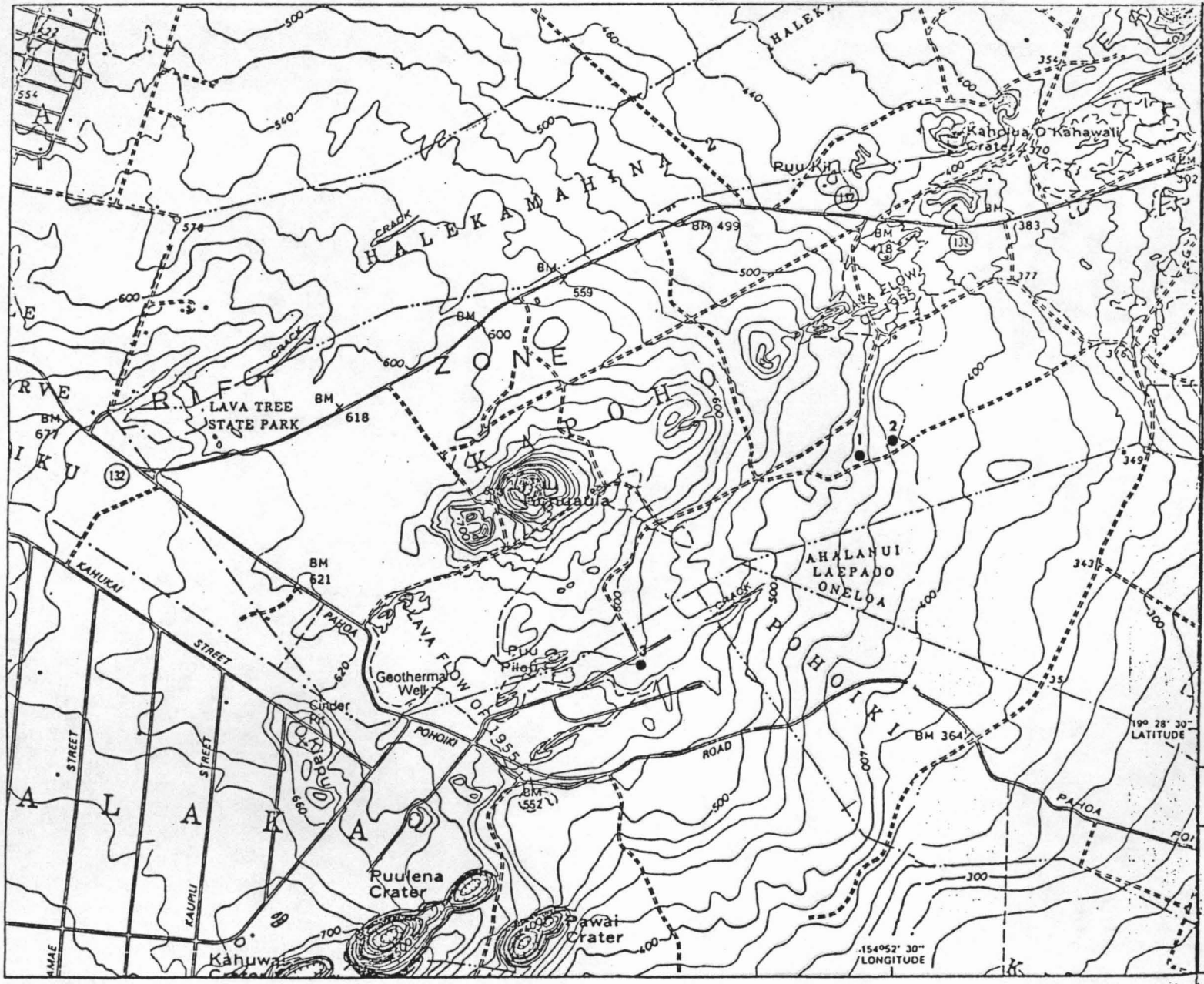
0 1 KM

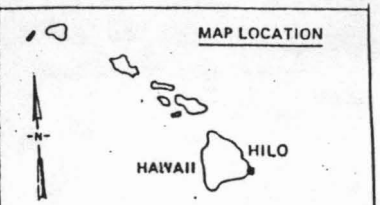
SOURCE: U.S.G.S., 1980, 1981a, 1981b

PUNA
GEOTHERMAL VENTURE PROJECT
HONOLULU, HAWAII

MAP 1
HAWAIIAN HAWK SIGHTINGS
JUNE 4 TO JULY 15, 1985

BECHTEL GROUP INC.	JOB. NO.	DRAWING NO.	REV.
	15722		





● 1 NEST SITE

SCALE
CONTOUR INTERVAL 20 FEET

0 ½ MILE
0 1000 2000 FEET
0 1KM

SOURCE: U.S.G.S., 1980, 1981a, 1981b

PUNA
GEOTHERMAL VENTURE PROJECT
HONOLULU, HAWAII

MAP 2
HAWAIIAN HAWK NEST SITES

BECHTEL GROUP INC.	JOB. NO.	DRAWING NO.	REV.
	15722		